

EXERCISES

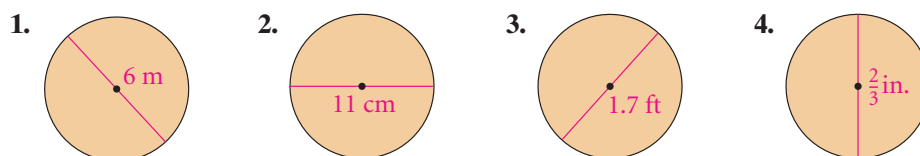
For more practice, see *Extra Practice*.

Practice and Problem Solving

A Practice by Example

Example 1 (page 396)

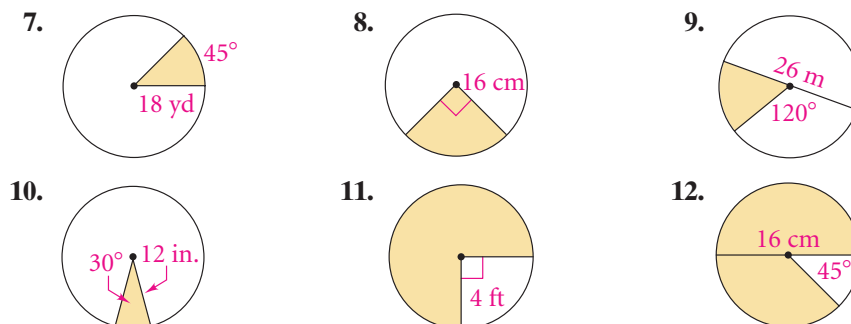
Find the area of each circle. Leave your answer in terms of π .



5. **Agriculture** Some farmers use a circular irrigation method. An irrigation arm acts as the radius of an irrigation circle. How much more land is covered with an irrigation arm of 300 ft than by an irrigation arm of 250 ft?
6. What is the difference in the areas of a circular table with diameter 6 ft and a circular table with diameter 8 ft?

Example 2 (page 396)

Find the area of each shaded sector of a circle. Leave your answer in terms of π .

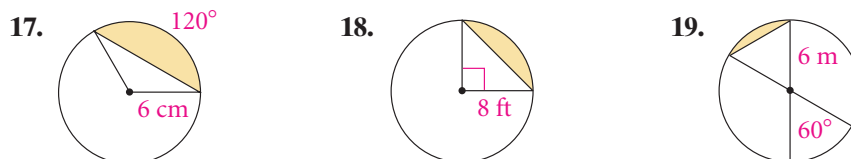


Find the area of sector TOP in $\odot O$ using the given information. Leave your answer in terms of π .

13. $r = 5$ m, $m\widehat{TP} = 90^\circ$ 14. $r = 6$ ft, $m\widehat{TP} = 15^\circ$
15. $d = 16$ in., $m\widehat{PT} = 135^\circ$ 16. $d = 15$ cm, $m\widehat{PT} = 180^\circ$

Example 3 (page 397)

Find the area of each shaded segment. Round your answer to the nearest tenth.

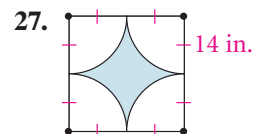
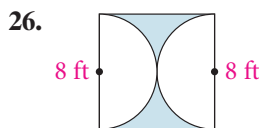
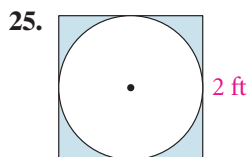
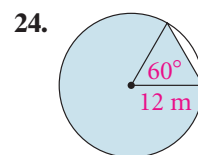
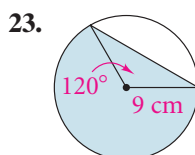
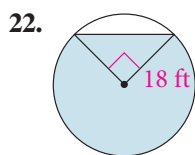


A circle has the given radius. Find the area of the smaller segment of the circle determined by an arc with the given measure. Round to the nearest tenth.

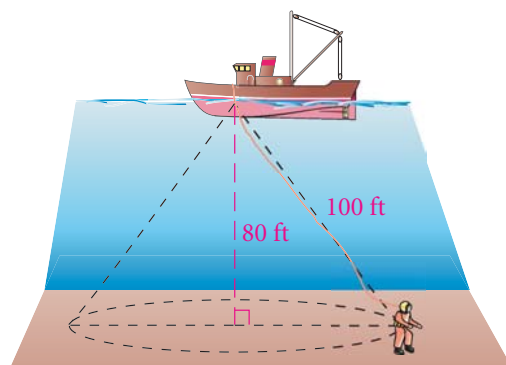
20. radius 15 m, arc 60° 21. radius 14 cm, arc 120°

B Apply Your Skills

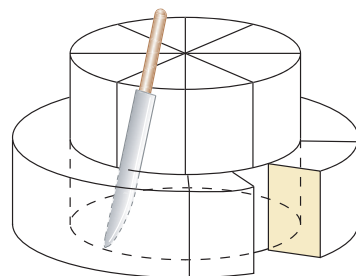
Find the area of the shaded region. Leave your answer in terms of π and in simplest radical form.



28. **Marine Biology** The diver at the right is working to bring up samples of organisms from the ocean floor. The line to the diver is 100 ft long, and the diver is working at a depth of 80 ft. What is the area of the circle that the diver can cover? Round your answer to the nearest square foot.



29. **Writing** The American Institute of Baking suggests a technique for cutting and serving a tiered cake. The tiers of a cake have the same height and have radii 8 in. and 13 in. The top tier and the cake directly under it are each cut into 8 wedges as shown. The outer ring of the 13-inch tier is cut into 12 pieces. Which would be larger, a piece from the top or a piece from the outer ring? Explain.

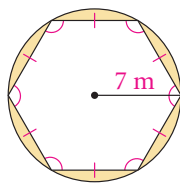


30. How many circles with radius 4 in. will have the same total area as a circle with radius 12 in.?
31. **Games** A dart board has diameter 20 in. and is divided into 20 congruent sectors. Find the area of one sector. Round your answer to the nearest tenth.
32. In a circle, a 90° sector has area 36π in.². What is the circle's radius?
33. **Open-Ended** Draw a circle and a sector so that the area of the sector is 16π cm². Give the radius of the circle and the measure of the arc of the sector.
34. A method for finding the area of a segment determined by a minor arc is described on page 397.
- Describe two ways to find the area of a segment determined by a major arc.
 - If $m\widehat{AB} = 90$ in a circle of radius 10, find the areas of the two segments determined by \widehat{AB} .

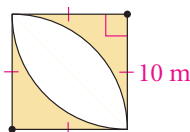
C Challenge

Find the area of the shaded region. Leave your answer in terms of π .

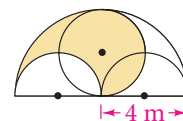
35.



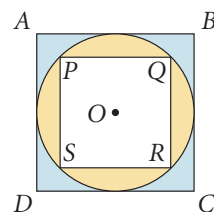
36.



37.



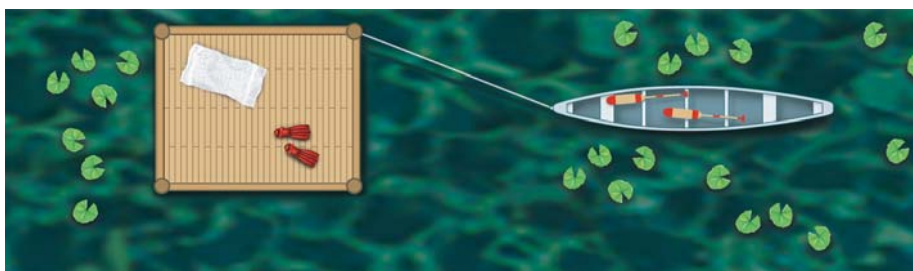
38. Circle O at the right is inscribed in square $ABCD$ and circumscribed about square $PQRS$. Which is smaller, the blue region or the yellow region? Explain.



39. Circles T and U each have a radius 10 and $TU = 10$. Find the area of the region that is contained inside both circles.



40. **Recreation** An 8 ft-by-10 ft floating dock is anchored in the middle of a pond. The bow of a canoe is tied to a corner of the dock with a 10-ft rope as shown in the picture below.
- Sketch a diagram of the region in which the bow of the canoe can travel.
 - Write a plan for finding the area.
 - Find the area. Round your answer to the nearest square foot.



Need Help?

For Exercise 39, where must T and U lie in a diagram of $\odot T$ and $\odot U$?



Standardized Test Prep

Multiple Choice

41. A circle has area $72\pi \text{ yd}^2$. What is the area of a 10° sector of the circle?
 A. $2\pi \text{ yd}^2$ B. $3\pi \text{ yd}^2$ C. $4\pi \text{ yd}^2$ D. $6\pi \text{ yd}^2$
42. A sector of 90° has area $\pi \text{ mm}^2$. What is the area of the circle?
 F. $2\pi \text{ mm}^2$ G. $4\pi \text{ mm}^2$ H. $8\pi \text{ mm}^2$ I. 4 mm^2

Short Response

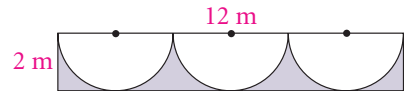


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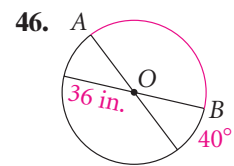
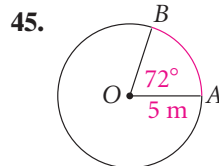
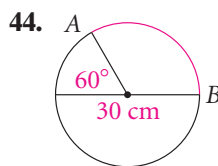
43. Each of three water sprinklers covers a semicircle of radius 2 m. The shaded region remains dry. Find the area of the shaded region to the nearest square meter. Show your work or explain how you found the area.



Mixed Review

Lesson 7-6

Find the length of \widehat{AB} in each circle. Leave your answers in terms of π .



Lesson 6-5

47. Three sides of a trapezoid are congruent. The fourth side is 4 in. longer than each of the other three. The perimeter is 49 in. Find the length of each side.

Lesson 4-7

48. Write a plan for a proof. (*Hint:* First prove overlapping triangles are congruent.)

Given: $\overline{AC} \cong \overline{BC}$, $\angle A \cong \angle B$

Prove: $\triangle BDF \cong \triangle AEF$

